



# Improve Front End Performance (How to Make More Quality Cans)

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Jaunarajs



# About IPS

## Services



- Equipment Support
- Training
- Integration Services
- 2-Piece & 3-Piece

## Products



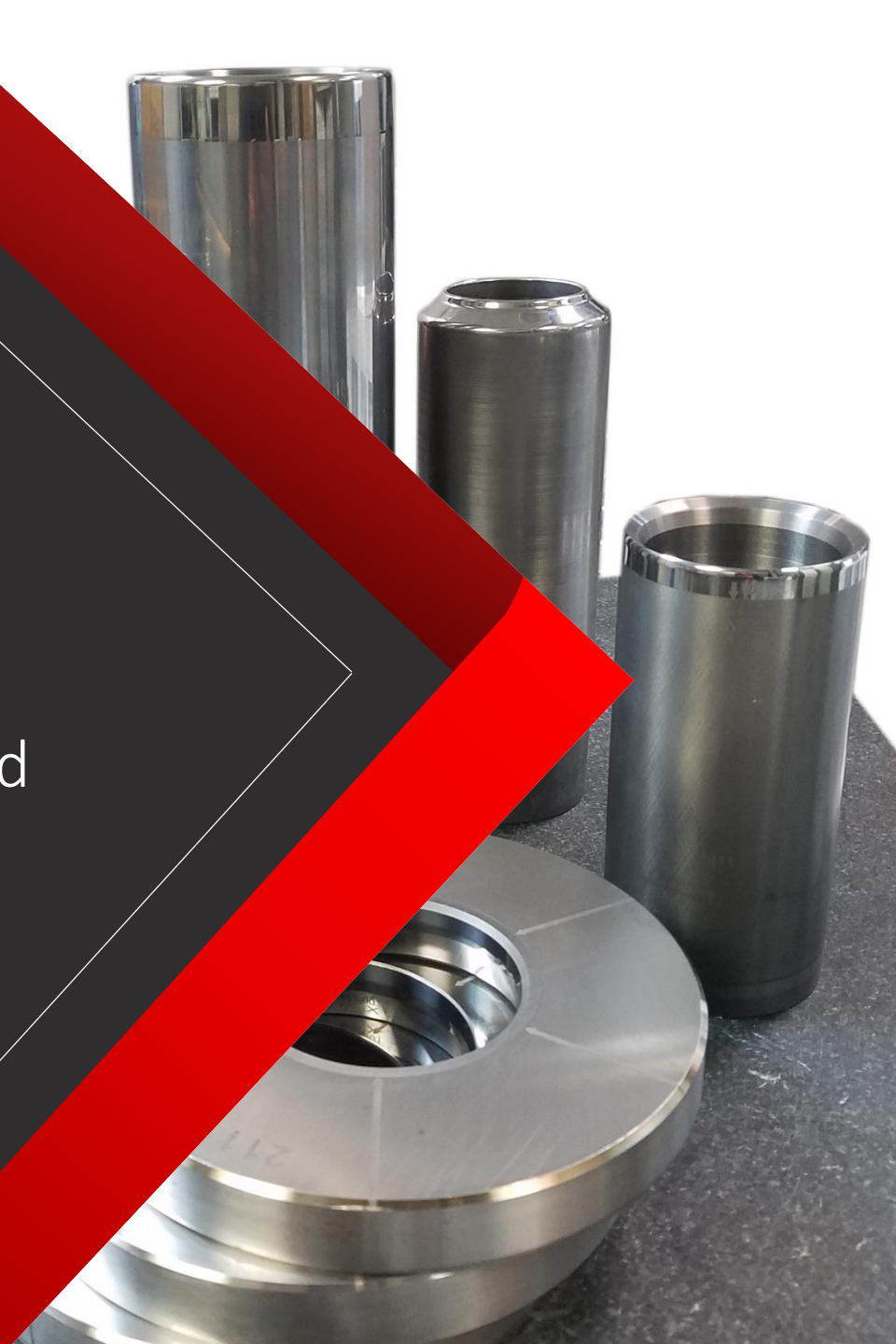
- Tool Surface Finish
- Tool Inspection
- Washer and Oven
- Tool tracking software





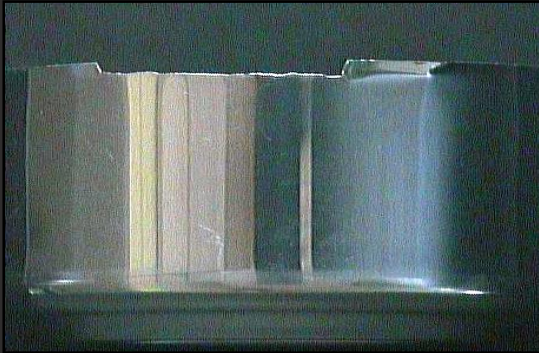
# Tooling Caused Spoilage & downtime

- ➔ Surface Finish Related
- ➔ Geometry Related



# #1 Tooling Surface Finish

*Caused Problem*



Tear-offs / short cans  
(result of bad surface finish on punch)

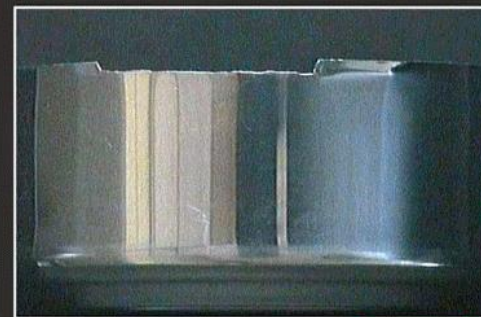


# Eliminating Tear-offs

- ➔ Tear-offs occur when metal slips on punch during ironing
- ➔ A punch surface finish adds friction, decreasing metal slippage (and tear-offs)
- ➔ Cross hatch is the ideal surface finish for Bodymaker punches

## Identifying Tensile Tear-offs

*Jagged Torn Edge*



*...caused by tensile stress*

Integrated Packaging Solutions

See the *IPS CanSCHOOL™* Lecture:  
“The Science of Tear-off Reduction”

# X2 CROSS HATCH™ machine



200+  
2

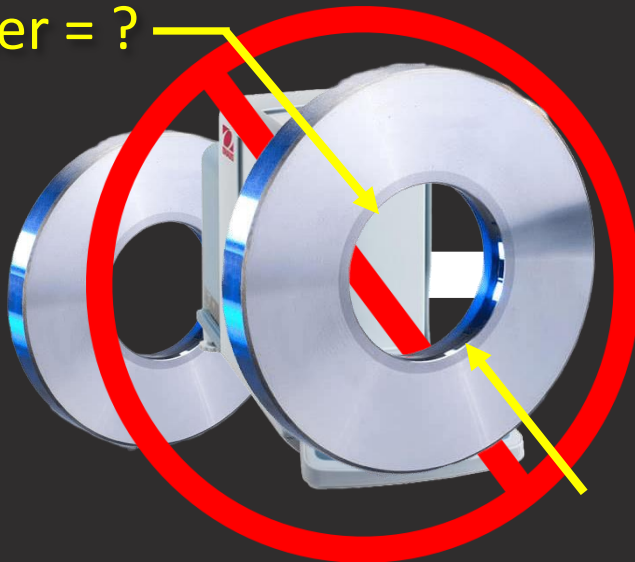
- ➔ Automated cross hatching
- ➔ Eliminates operator influence
- ➔ Consistent, repeatable results

Machines  
Machines Sold  
Globally

# #1 Tooling Geometry

*Caused Problem*

Diameter = ?



Unreliable Inventory

*Unreliable Inventory*

*is corrected by*

*Gauge Accuracy,  
Repeatability  
& Process Control*



# Tool Measuring 101

## Non-Contact Gauge



# TOOL/SCAN 2.0™

Precision Tooling Measurement



and type

t  
s

# Non-Contact Gauges



Bodymaker Punches



Bodymaker Dies



Necker Dies and Knockouts

Probes



Uses Green LED Micrometer

geometry



Measures various tool geometries and tool types

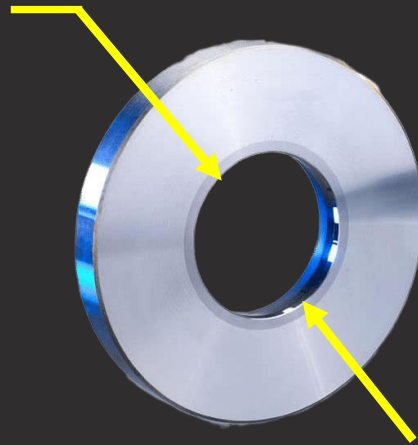


Excellent accuracy & repeatability

Shown with **ToolCONTROL™** for data integration & repeatability

# Remember...

Diameter = ?



Unreliable Inventory

*lack of repeatability is often  
the fault of the gauge, NOT the  
operator*



# Making More Quality Cans

is a

## Two-Step Process

*1<sup>st</sup> Step*

**Making  
More Cans**



*2<sup>nd</sup> Step*

**Improving  
Can Quality**

Repeatable, Scalable, Efficient, and Effective





# 3 Categories of Can Quality

Optimized Can Weight

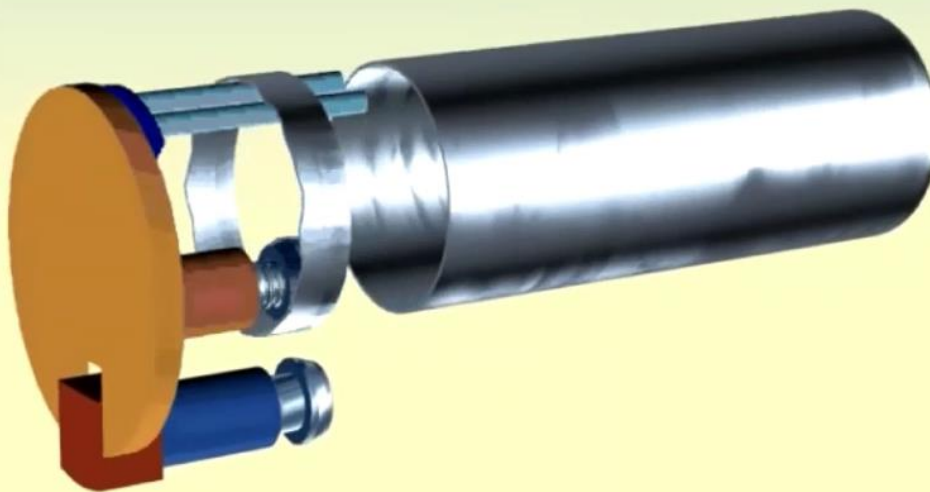


Our Focus

Did you know...



# Can Plants Make 2 x Products



Trim scrap is sold  
back to the mill  
based on  
price per pound (to minimize)

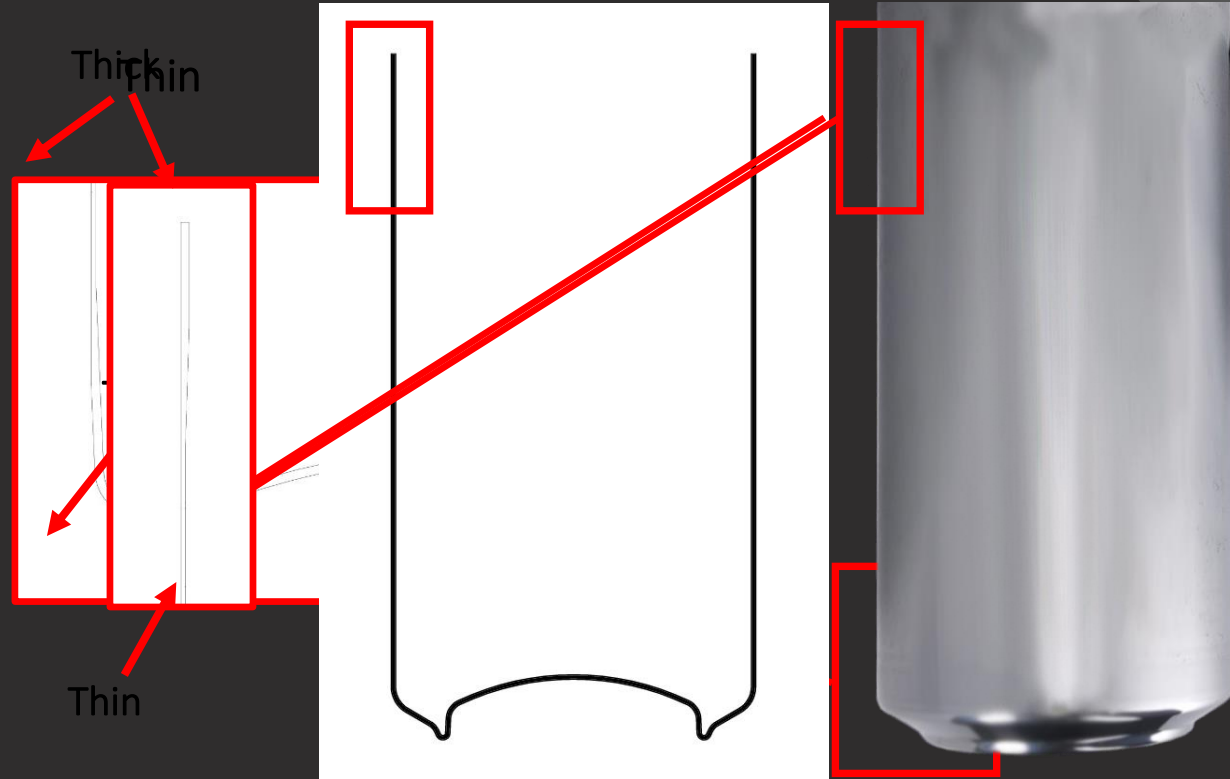
the trim scrap weight  
Trimmer scrap is less predictable  
and can have significant variation,  
based largely on tooling geometry

Bodymaker / Trimmer scrap can be worth  
as much as \$500K/year for a can line  
producing 1 Billion cans/year

## #1 Copper and Trimmer



# Understanding Can Profile & Tool Geometry

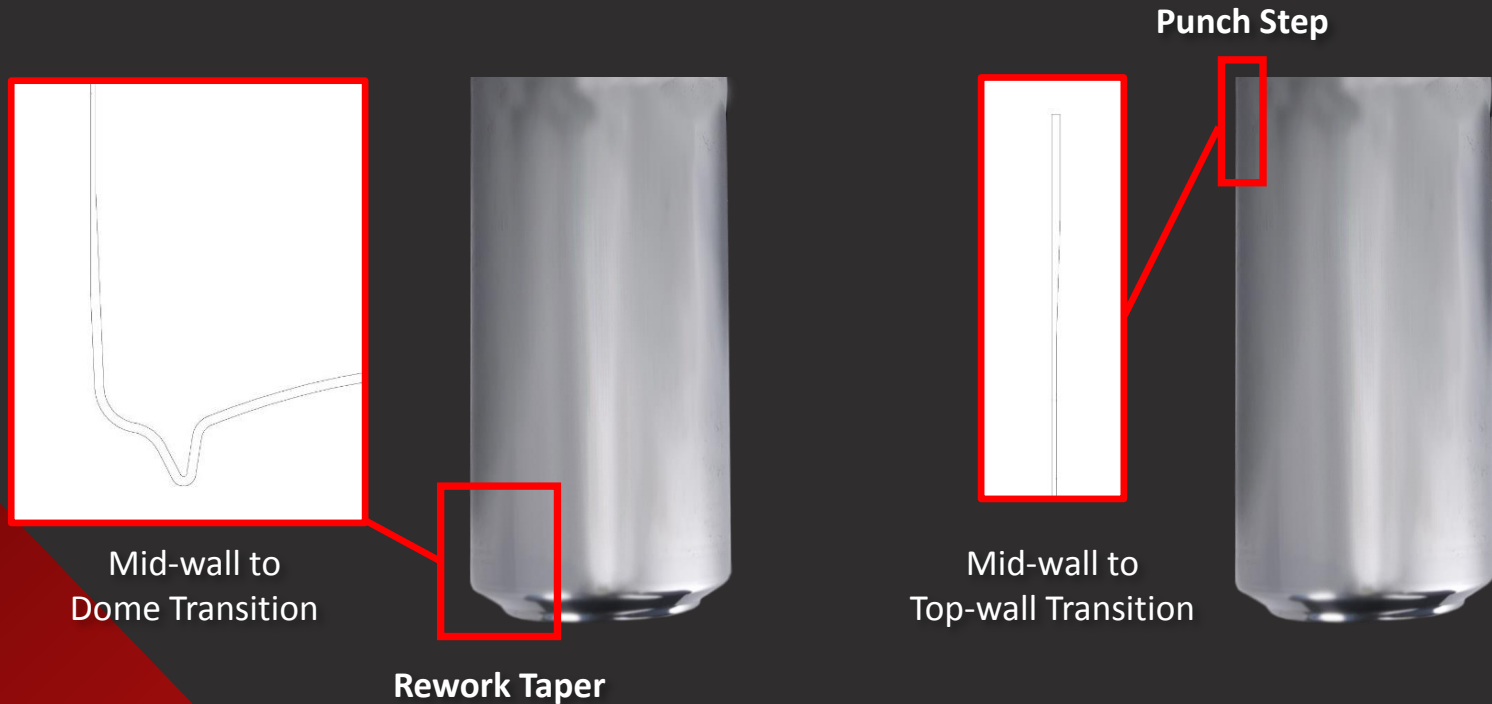


Mid-wall to  
Top wall transition

Punch Transition  
(or Stepper)



# The Value of Controlling Tooling Geometry



Mid-wall to Dome Transition

Rework Taper

Mid-wall to Top-wall Transition

Punch Step

If critical Punch profiles are not controlled  
**25% +** of trim scrap can easily be left in the can



# How to Control Tooling Geometry

## (2) High Quality Tooling



*Punch Scan Report*

Results Analysis

PARAMETER	SPEC	TOLERANCE	ACT	PASS/FAIL
STEP WIDTH	0.330 inch	±0.12 in-ch	0.299488	inch Pass
STEP HEIGHT	0.00±0.00 inch	0.00±0.00 inch	0.002607	inch Pass
STEP LOCATION	4.180 inch	0.002 inch	4.179744	inch Pass

Enter the Report Notes

Clear Notes

Re-measure Save Scan Data

Print Transition Report

**Punch Profile**

**Detail View**

Up Down Left Right

Tooling Factory delivered, in-spec

Tool surface finish Quality materials

Respect dimensions not a persuasion

Bodymaker

KEY – Select a Quality Supplier!

KEY – Start with a good punch!

Must rely on supplier to provide consistent, timely delivery of quality tooling before

Punch Transition/Step Inspection Report inserting into Bodymaker

**TOOL/SCAN 2.0™**

# Too/SCAN 2.0™

Precision Tooling Measurement



- Ironing and Redraw Die ID & Roundness
- Punch OD, Rework Taper, Step Scan, etc.
- Necker Die and Knockout capabilities (*coming January 2020*)
- 0.000015in / 0.38 micron repeatability
- Measurements in 15-sec or less
- Remote support module
- **Too/CONTROL™** integration (*coming 2020*)

# Special Thanks to CanTech and all attendees

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